

C L A I M S

1. Apparatus for sea transport of fresh water comprising:
at least one fresh water enclosure communicating with at least one fresh water loading/unloading valve;
a plurality of at least partially flexible, collapsible sea water enclosures disposed within each of said at least one fresh water enclosure; and
at least one opening communicating with each one of said plurality of sea water enclosures for selectably allowing sea water to fill said plurality of sea water enclosures, thereby causing said fresh water to be expelled against the force of gravity from said at least one fresh water enclosure.
2. Apparatus according to claim 1 and wherein said at least one fresh water enclosure is a flexible enclosure.
3. Apparatus according to claim 2 and also comprising a plurality of mutually spaced enclosure cross-section defining assemblies.
4. Apparatus according to claim 3 and wherein said sea water enclosures are disposed intermediate adjacent pairs of said enclosure cross-section defining assemblies.
5. Apparatus according to claim 3 and wherein said enclosure cross-section defining assembly comprises an elongate float element.
6. Apparatus according to claim 5 and wherein said elongate float element is attached to an interior top surface of said fresh water enclosure.
7. Apparatus according to claim 5 and wherein said elongate float element is attached to an interior top surface of said fresh water enclosure by a plurality of mutually spaced straps.

8. Apparatus according to claim 5 and wherein said elongate float element floats on sea water.

9. Apparatus according to claim 5 and wherein said enclosure cross-section defining assembly also comprises a multiplicity of weighting elements attached to a bottom portion.

10. Apparatus according to claim 9 and wherein said multiplicity of weighting elements each comprise:

a water resistant container filled with metal.

11. Apparatus according to claim 9 and wherein said enclosure cross-section defining assembly also comprises:

a first plurality of straps attached to said elongate float element at a plurality of locations;

a second plurality of vertically extending straps;

a third plurality of straps attached to said bottom element;

a first plurality of rings, attaching each of said first plurality of straps to a corresponding one of said second plurality of straps; and

a second plurality of rings, attaching each of said second plurality of straps to a corresponding one of said third plurality of straps.

12. Apparatus according to claim 11 and wherein said enclosure cross-section defining assembly also comprises:

a first and a second generally vertically extending side supports, attached to interior side surfaces of said fresh water enclosure;

a fourth plurality of side-to-side extending straps, attached to said first generally vertically extending side support;

a fifth plurality of side-to-side extending straps, attached to said second generally vertically extending side support;

a sixth plurality of horizontally extending straps;

a third plurality of rings, connecting each of said fourth plurality of straps to a corresponding one of said sixth plurality of straps; and

a fourth plurality of rings, connecting each of said fifth plurality of straps to a corresponding one of said sixth plurality of straps.

13. Apparatus according to claim 12 and wherein said second plurality of vertically extending straps and said sixth plurality of horizontally extending straps are joined at at least one junction point therebetween.

14. Apparatus according to claim 1 and wherein said sea water enclosures are operative to hold sea water separately from said fresh water enclosure.

15. Apparatus for sea transport of fresh water comprising:

a flexible enclosure including a plurality of mutually spaced enclosure cross-section defining assemblies; and

a plurality of at least partially flexible, collapsible sea water enclosures disposed within said flexible enclosure,

wherein said sea water enclosures are disposed intermediate adjacent pairs of said enclosure cross-section defining assemblies.

16. Apparatus according to claim 15 and wherein said flexible enclosure comprises at least one fresh water enclosure communicating with at least one fresh water loading/unloading valve.

17. Apparatus according to claim 16 and also comprising a plurality of openings communicating with said plurality of sea water enclosures for selectably allowing sea water to fill said plurality of sea water enclosures, thereby causing said fresh water to be expelled against the force of gravity from said at least one fresh water enclosure.

18. Apparatus according to claim 16 and wherein said enclosure cross-section defining assembly comprises an elongate float element.

19. Apparatus according to claim 18 and wherein said elongate float element is attached to an interior top surface of said fresh water enclosure.
20. Apparatus according to claim 18 and wherein said elongate float element is attached to an interior top surface of said fresh water enclosure by a plurality of mutually spaced straps.
21. Apparatus according to claim 18 and wherein said elongate float element floats on sea water.
22. Apparatus according to claim 18 and wherein said enclosure cross-section defining assembly also comprises a multiplicity of weighting elements attached to a bottom portion.
23. Apparatus according to claim 22 and wherein said multiplicity of weighting elements each comprise:
a water resistant container filled with metal.
24. Apparatus according to claim 22 and also comprising:
a first plurality of straps attached to said elongate float element at a plurality of locations;
a second plurality of vertically extending straps;
a third plurality of straps attached to said bottom element;
a first plurality of rings, attaching each of said first plurality of straps to a corresponding one of said second plurality of straps; and
a second plurality of rings, attaching each of said second plurality of straps to a corresponding one of said third plurality of straps.
25. Apparatus according to claim 24 and also comprising:
a first and a second generally vertically extending side supports, attached to interior side surfaces of said fresh water enclosure;

a fourth plurality of side-to-side extending straps, attached to said first generally vertically extending side support;

a fifth plurality of side-to-side extending straps, attached to said second generally vertically extending side support;

a sixth plurality of horizontally extending straps;

a third plurality of rings, connecting each of said fourth plurality of straps to a corresponding one of said sixth plurality of straps; and

a fourth plurality of rings, connecting each of said fifth plurality of straps to a corresponding one of said sixth plurality of straps.

26. Apparatus according to claim 25 and wherein said second plurality of vertically extending straps and said sixth plurality of horizontally extending straps are joined at at least one junction point therebetween.

27. Apparatus according to claim 16 and wherein said sea water enclosures are operative to hold sea water separately from said fresh water enclosure.

28. Apparatus for sea transport of light liquid comprising:
at least one light liquid enclosure communicating with at least one light liquid loading/unloading valve;

a plurality of at least partially flexible, collapsible sea water enclosures disposed within each of said at least one light liquid enclosure; and

at least one opening communicating with each one of said plurality of sea water enclosures for selectably allowing sea water to fill said plurality of sea water enclosures, thereby causing said light liquid to be expelled against the force of gravity from said at least one light liquid enclosure,

wherein said light liquid is lighter than sea water.

29. Apparatus according to claim 28 and wherein said at least one light liquid enclosure is a flexible enclosure.

30. Apparatus according to claim 29 and also comprising a plurality of

mutually spaced enclosure cross-section defining assemblies.

31. Apparatus according to claim 30 and wherein said sea water enclosures are disposed intermediate adjacent pairs of said enclosure cross-section defining assemblies.

32. Apparatus according to claim 30 and wherein said enclosure cross-section defining assembly comprises an elongate float element.

33. Apparatus according to claim 32 and wherein said enclosure cross-section defining assembly also comprises a multiplicity of weighting elements attached to a bottom portion.

34. Apparatus according to claim 33 and wherein said enclosure cross-section defining assembly also comprises:

- a first plurality of straps attached to said elongate float element at a plurality of locations;

- a second plurality of vertically extending straps;

- a third plurality of straps attached to said bottom element;

- a first plurality of rings, attaching each of said first plurality of straps to a corresponding one of said second plurality of straps;

- a second plurality of rings, attaching each of said second plurality of straps to a corresponding one of said third plurality of straps;

- a first and a second generally vertically extending side supports, attached to interior side surfaces of said light liquid enclosure;

- a fourth plurality of side-to-side extending straps, attached to said first generally vertically extending side support;

- a fifth plurality of side-to-side extending straps, attached to said second generally vertically extending side support;

- a sixth plurality of horizontally extending straps;

- a third plurality of rings, connecting each of said fourth plurality of straps to a corresponding one of said sixth plurality of straps; and

a fourth plurality of rings, connecting each of said fifth plurality of straps to a corresponding one of said sixth plurality of straps.

35. Apparatus according to claim 28 and wherein said sea water enclosures are operative to hold sea water separately from said light liquid enclosure.

36. Apparatus for sea transport of light liquid comprising:
a flexible enclosure including a plurality of mutually spaced enclosure cross-section defining assemblies; and
a plurality of at least partially flexible, collapsible sea water enclosures disposed within said flexible enclosure,
wherein said sea water enclosures are disposed intermediate adjacent pairs of said enclosure cross-section defining assemblies.

37. Apparatus according to claim 36 and wherein said flexible enclosure comprises at least one light liquid enclosure communicating with at least one light liquid loading/unloading valve.

38. Apparatus according to claim 37 and also comprising a plurality of openings communicating with said plurality of sea water enclosures for selectably allowing sea water to fill said plurality of sea water enclosures, thereby causing said light liquid to be expelled against the force of gravity from said at least one light liquid enclosure.

39. Apparatus according to claim 37 and wherein said enclosure cross-section defining assembly comprises an elongate float element.

40. Apparatus according to claim 39 and wherein said enclosure cross-section defining assembly also comprises a multiplicity of weighting elements attached to a bottom portion.

41. Apparatus according to claim 40 and also comprising:

a first plurality of straps attached to said elongate float element at a plurality of locations;

a second plurality of vertically extending straps;

a third plurality of straps attached to said bottom element;

a first plurality of rings, attaching each of said first plurality of straps to a corresponding one of said second plurality of straps;

a second plurality of rings, attaching each of said second plurality of straps to a corresponding one of said third plurality of straps;

a first and a second generally vertically extending side supports, attached to interior side surfaces of said light liquid enclosure;

a fourth plurality of side-to-side extending straps, attached to said first generally vertically extending side support;

a fifth plurality of side-to-side extending straps, attached to said second generally vertically extending side support;

a sixth plurality of horizontally extending straps;

a third plurality of rings, connecting each of said fourth plurality of straps to a corresponding one of said sixth plurality of straps; and

a fourth plurality of rings, connecting each of said fifth plurality of straps to a corresponding one of said sixth plurality of straps.

42. Apparatus according to claim 37 and wherein said sea water enclosures are operative to hold sea water separately from said light liquid enclosure.

43. A method for sea transport of fresh water comprising:

providing a vessel including:

at least one fresh water enclosure communicating with at least one fresh water loading/unloading valve ;

a plurality of at least partially flexible, collapsible sea water enclosures disposed within each of said at least one fresh water enclosure; and

at least one opening communicating with each one of said plurality of sea water enclosures;

loading said vessel by selectably filling said fresh water enclosure with

fresh water; and

unloading said vessel by selectably allowing sea water to fill said plurality of sea water enclosures, thereby causing said fresh water to be expelled against the force of gravity from said at least one fresh water enclosure.

44. A method according to claim 43 and wherein said loading takes place principally by gravity and said unloading take place principally without requiring pumping.

45. A method for sea transport of fresh water comprising:
providing a vessel including:

a flexible enclosure including a plurality of mutually spaced enclosure cross-section defining assemblies; and

a plurality of at least partially flexible, collapsible sea water enclosures disposed within said flexible enclosure,

wherein said sea water enclosures are disposed intermediate adjacent pairs of said enclosure cross-section defining assemblies;

loading said vessel by selectably filling said flexible enclosure with fresh water; and

unloading said vessel by selectably allowing sea water to fill said plurality of sea water enclosures, thereby causing said fresh water to be expelled against the force of gravity from said flexible enclosure.

46. A method according to claim 45 and wherein said loading takes place principally by gravity and said unloading take place principally without requiring pumping.

47. A method for sea transport of light liquid comprising:
providing a vessel including:

at least one light liquid enclosure communicating with at least one light liquid loading/unloading valve;

a plurality of at least partially flexible, collapsible sea water

enclosures disposed within each of said at least one light liquid enclosure; and
at least one opening communicating with each one of said plurality of sea water enclosures;
loading said vessel by selectably filling said light liquid enclosure with light liquid; and
unloading said vessel by selectably allowing sea water to fill said plurality of sea water enclosures, thereby causing said light liquid to be expelled against the force of gravity from said at least one light liquid enclosure.

48. A method according to claim 47 and wherein said loading takes place principally by gravity and said unloading take place principally without requiring pumping.

49. A method for sea transport of light liquid comprising:
providing a vessel including:
a flexible enclosure including a plurality of mutually spaced enclosure cross-section defining assemblies; and
a plurality of at least partially flexible, collapsible sea water enclosures disposed within said flexible enclosure,
wherein said sea water enclosures are disposed intermediate adjacent pairs of said enclosure cross-section defining assemblies;
loading said vessel by selectably filling said flexible enclosure with light liquid; and
unloading said vessel by selectably allowing sea water to fill said plurality of sea water enclosures, thereby causing said light liquid to be expelled against the force of gravity from said flexible enclosure.

50. A method according to claim 49 and wherein said loading takes place principally by gravity and said unloading take place principally without requiring pumping.